POLICY ENHANCEMENT AND PRODUCTIVITY PROJECT

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A Review of Cashew Production, Processing and Marketing Operations in Honduras

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Brief Summary Report

Cashew is a tree of the wet and dry tropics and is grown in a number of tropical countries. The tree produces a seed that can be processed for its' kernel. There are also by-products of shell liquid (used in manufacture of brake and clutch linings and other products) and also the apple which is usually consumed as fresh fruit but in some countries is manufactured into juice and other products. In terms of commercial use however the cashew kernel is by far the most important product in terms of value.

Cashew is a cross-pollinated tree and seedling trees can exhibit significant variability in production and nut quality. The only way to ensure a consistent high performance is to use vegetative propagation from superior parental stock. Cashew also responds well to being planted in suitable soils with added inputs and good management, however currently over 95 percent of the worlds' plantings are unselected seedling trees that receive few if any inputs and poor management.

The annual total world production of cashew seed is approaching 1.0 million MT. The major producers and processors are India, Brazil and Vietnam who together produce about 65 percent of the world crop. There are a number of countries in Africa and Asia that are also significant cashew producers. Production in Central America is negligible, however there are some modest sized plantings of cashew in El Salvador, Honduras and Guatemala.

North America, Europe, Japan and Australia are the major importers of cashew kernels in a trade valued at $900 million fob. There are also very significant domestic markets in a number producing countries especially in India ($125 million) and other Asian countries.

World production of cashew has increased significantly over the past 25 years (100 percent), and today this trend continues increasing especially in Vietnam and some African countries (Tanzania) where they are trying to rehabilitate their industries from damage previously caused by civil war and politics. World consumption is also rising strongly, the mature markets of North America and Europe have expanded at similar rates, however the demand from some Asian countries, (India, China especially) is increasing rapidly. In these Asian countries cashew is already well known and part of the local diet and the emergence of a growing middle class market is expected to lead to significant increases in future demand.

In summary world cashew prices have remained relatively stable over the past 20 years with W 320 grade kernel prices ranging from about $2.40 to $3.00/lb for the majority of this period. The outlook is that while production is likely to continue increasing this should be matched by increasing demand, especially from Asian countries. Therefore apart from occasional disruptions to supply caused by bad crops in major producing countries the price of cashew should remain within the $2.40 - $3.00/lb range for the foreseeable future. It is also to be noted that the scale of the world market suggests that any developments in the cashew industry in Honduras, or in Central America will have virtually no impact on the world scene.

In terms of the world market there are really two separate markets:

The international world market comprising 99.5 percent of world trade that allows the use of chemicals in production, but (in major markets especially) has:

(1) high standards of hygiene in processing and packaging. The hygiene factor extends both to possible contamination of the product and possible infestation by insect pests, especially Indian meal moth *(Plodia interpunctella)*, or the Kapra beetle. If a consignment is found to be infested the buyer faces significant additional costs of freezing the product to rectify the problem.

(2) require product classified into specific grades, such as W320, scorched wholes etc.

(3) prefer to deal in larger volumes with big suppliers, frequently buying single or mixed grades by container load (15 MT).

(4) prefer to deal with suppliers with a good track record, - a priority in an industry where defaulting on contracts by suppliers can occur when subsequent prices move unfavorably.

The organic market, (0.5 percent world trade) a relatively new development currently offers a 50 percent price premium. The requirements in this industry are requires official certification that no chemicals and certain other substances are used during production and processing. In this market

(1) normally requires official certification that no chemicals or other banned substances are used in production.

(2) buyers accept smaller volumes

(3) often more relaxed (for now) standards in processing and product classification and currently receives a 50 percent price premium.

There is also appears a fringe element of the organic market where cashew grown under organic conditions but not officially certified may be sold as ‘natural cashew’ and receive a price premium.

Cashew production in Honduras in concentrated mainly in the department of Choluteca where there are some 2,500 hectares planted, of which 80 percent are mature producing trees and the balance are new plantings. All plantings in Honduras are seedling trees and there is virtually no use of inputs and little management and as a consequence yields are low, but similar to outcomes experienced in other countries under similar conditions. The total crop in Honduras is about 1,300 – 1,400 MT of raw nuts, this represents a miniscule 0.1 percent of world production.

The cashew is grown by small farmers (5 – 10 Mz) who have formed into groups, (10 – 15 per group) and these groups have a relationship with one of the processing/marketing organization for the purposes of selling their crop. This relationship also involves a membership by some farmers in two of the processing/marketing organizations which are cooperative organizations (UNC, La Surinita).

Processing and marketing - there are three processor/marketing organizations in the cashew industry, all based locally in Choluteca, they are

(1) *Union Nacional de Campesinos* (UNC), a farmers' cooperative of about 350 members who produce a crop of about 500 MT raw nuts. UNC operates a small, very basic processing factory that employs 55 workers when operational. The factory uses a conventional hot oil bath system and wooden mallets for shelling. However the factory is deficient in facilities to meet good processing standards and has insufficient capacity to process their whole crop.

In addition UNC has a severe shortage of working capital that forces them to make sales of raw crop for immediate cash needs, especially to finance the processing function – unfortunately this results in lower prices. In 2000 UNC sold 50 percent of their crop as raw nuts to a Guatemalan buyer for a net return of $506/MT for immediate payment, and had to decline an alternative offer from an Indian buyer of $725/MT but with LC payment in 45 days. This injection of funds did allow UNC to operate their factory and process 14 percent of their crop and the kernel was sold in the Central American market (whole grades $2.70/lb).

However it needs to be noted that they achieved poor results from their kernel sales ($735/MT). Assuming similar prices this must be compared to an income of $1,100/MT if a reasonably good quality crop was processed in efficient processing operations. The reasons for this poor result could include;

- poor genetic characteristics of crop
- poor crop drying and storage techniques
- inexperienced process workers
- inadequate processing equipment

(2) *La Surinita,* - is a collective cooperative of four organizations of 154 groups involving 1,800 people. La Surinita is a female managed organization with the members largely being the wives of the farmers who grow the crop. La Surinita draws its' crop from 450 Mz of cashew. La Surinita also operates a number of small processing factories where the standards of operation are basic. They use conventional hot oil bath technology and wooden mallets for shelling. In 2000 they received 272 MT raw nuts from their own members and bought in 180 MT mainly from UNC. La Surinita was able to process the whole crop and of the kernel produced (86 MT), about 50 percent was sold to mainly to Gepa in Germany as 'natural cashew' at a 50 percent price premium over normal world prices. The balance was sold in the local Honduran market.

The conclusion is that La Surinita is in a reasonable financial position as it appears to have a relatively secure higher priced market (Gepa) and can place the balance in the local market. This financial position is also assisted by the advance normally forwarded by Gepa to assist Surinita finance the processing of the crop destined for Gepa. However it would be noted that the standard of factory operations at Surinita would be considered marginal at best or substandard by the standards of the international trade.

1. *Tecni Services Monjaras* (TSM) – is a private cashew processing business owned by Mario Argenal that has the largest processing facilities in Honduras. The company has three processing factories that together employ about 500 workers and process about 500 MT of raw crop. Of this total which about 80 percent was purchased from farmers apparently associated with TSM, and the balance from UNC. The majority of the kernel produced is sold in the Central American market, especially Costa Rica and El Salvador.

   The factories use conventional hot oil bath technology and shelling is undertaken by wooden mallets. The overall conditions in the factory are basic, and Mario indicated that he had a number of concerns about his product quality. However in general Mario was unwilling to discuss any performance data about his operations.

Recommendations

In general the cashew processing industry in Honduras face the following problems,

1. Volumes of final product produced are very small, annual output ranging from 10 MT at UNC, about 80 MT from La Surinita to perhaps 90 - 100 MT at MTS. This is in contrast to the volume requirements of the international market which dictates that suppliers probably have to produce a minimum of 200 or 300 MT kernel p.a. in order to reasonably meet the buyers requirements in the international market.

2. All the processors, but UNC in particular would have barely adequate to deficient standards of hygiene in production methods. Increasingly buyers are looking to improve standards towards what are required in developed world food processing facilities.

3. The standard of facilities and equipment used in the factories would range from barely adequate to deficient in the case of some parts of the process at La Surinita and MTS to deficient at UNC.

4. None of the processors undertake a grading system adequate for the international market, but it is adequate for Central America and probably for the organic cashew market.

5. None of the processors (or anyone else associated with the industry) have any worthwhile information on the cashew market and minimal contact with potential buyers.

However *the opportunity* existing in Honduras is that virtually all production of cashew has been 'organic' by default as no inputs, chemical or otherwise has been used on the cashew trees for a number of years.

These recommendations would apply to all the processors in Honduras are as follows,

1. *Enter the organic cashew market.* Efforts should be made by all three processors to obtain official certification for organic status from an approved organization for their sources of supply (farmers) and their processing methods. Depending on their future market priorities they can either chose (1) Organic Crop Improvement Association (OCIA) of USA, or (2) a European organization acceptable to the European Union like ECOCER (Germany) – an organization that also certifies the coffee industry in Costa Rica.

   La Surinita currently have a arrangement to supply Gepa in Germany with 'naturally grown cashew' in a somewhat unique arrangement for which they receive an organic price. This market is 50 percent of their output and it may be difficult to replace if they do not have official certification.

2. *Improve the standards of hygiene,* this applies to all processors, however it is most critical at UNC because their factory is in the poorest condition and their shortage of funding severely limits what they can do. Some of the issues that could need attention are as follows below: (an example of the health standards required by international buyers is the typical questionnaire form used a buyer to audit a processing factory - shown in Annex C.)

   - factory buildings should be closed to the environment, with no entrance allowed to non workers, animals etc

   - interior of all work places where raw kernel is in process should be clean and dust free, and should be subject to regular cleaning.

   - All workers handing raw kernel product should be appropriately clothed with adequate facilities for washing.

   - proper fumigation for insect pests of final product preceding immediate packing

   - if necessary, both metal detection and bacterial tests of final product may be required.

3. *Improve processing efficiency in the factory* by use of new equipment and modifications
in processing methods. The consultant made an inspection of all factories and made suggestions where appropriate as follows

    - all raw crop should be dried in the sun for three days before storage (to prevent moisture damage).

    - all crop should be stored in jute bags instead of current practice of using nylon bags. (to prevent overheating of crop and subsequent CNSL contamination).

    - raw nuts should be graded by size (say 3/4 grades) before commencing processing function. This allows more consistent outcomes during the various processing stages and ultimately greater efficiency.

    - greater use should be made of hand (or foot) operated shelling machines to improve worker productivity.

    - if workers do not wish to use gloves then vegetable oils could be tried to eliminate damage to workers hands during shelling function.

    - more care taken regarding timing and temperatures during key oil bath and drying stages. It was suggested by the consultant that oil bath standards should be 90 seconds for 185 degrees C, and kernel drying is preferred down to a minimum of 4.5 percent moisture.

    - factory should have basic laboratory equipment (balance, oven) to undertake simple analysis (moisture tests etc) to allow more accurately monitoring of processing stages.

    - appropriate fumigation should be carried out before final packaging- especially to avoid infestation of Indian meal moth (*Plodia interpuntella).* A fumigation chamber is the best method. The normal requirement is phostoxin gas for 7 days, however in the event of organic production the use of either Nitrogen or CO^2 gas for 14 days is the alternative.

4. *Improvement market knowledge and access to potential buyers.* The consultant understands that the PEP project is planning to set up a system where they will place computers in selected locations in the project area, possibly in the offices of the Chamber of Commerce. It is proposed that through Internet connections the various parties will be able to make access to market data and contacts with buyers.

    In addition it is proposed that PEP prepare a brief review of the world cashew market, drawn from the chapter Review of World Cashew Market which is part of this report. This publication could be translated into Spanish and distributed to interested parties in the industry.

In addition market contact information from Annex A Description of Major Markets in this report could be translated and supplied by PEP where necessary to interested parties.

The following recommendations apply specifically to UNC:

1. *To rectify shortage of working capital.* This problem forces UNC to make sales of raw nuts for immediate cash under unfavorable terms just to raise funds to allow them to operate their processing factory. UNC have prepared a plan to re-organize their producer groups into a new organization that would have a legal status and be in a position to obtain credit funding, UNC should be encouraged to follow up with this restructure.

2. *To improve hygiene and standard of facilities.* UNC have produced a plan to build new facilities and acquire both new equipment and professional staff so as to (1) double processing capacity and (2) improve hygiene standards.

   This plan is shown in Section 5.33 of this report and in Annex B. It asks for donor funding of $102,500, and assistance in kind of $19,200 from the Honduran Government. The plan in principle is worthy of consideration, however the consultant believes it should be re-worked to include more new equipment (including shelling machines), a better building structure and some simple laboratory equipment.

Potential of Cashew Production in the Danlí Region

The consultant made a rapid evaluation of the potential to grow cashew in the Danlí region. There are three critical criteria that require evaluation, these are :

soil type	- cashew grows well on deep well drained soils, especially sandy soils with a minimum profile of 1.5 meters and apH between 5.5 and 7.0
temperature	- preferred temperature range between 15 degrees C and 35 degrees C., perhaps an ideal average temperature is about 27 degrees C. Certainly low temperatures, especially below 5 degrees C can be harmful and any frost can kill young trees.
Rainfall	- a minimum annual rainfall of 800 mm and a total 1,000 mm + is preferred. Rainfall distribution should a dry period of 4 to 5 months during the flowering and fruiting period of the cashew. During this period there should be at most occasional light showers. Heavy rain in the dry season can be harmful.

Comment – soils. The consultant was able to make a quick visual inspection of some sites and analyze some temperature and rainfall data. He was unable to undertake any proper soil analysis because no suitable soil sampling equipment was available. However the consultants' visual inspections would suggest that areas of suitable soils are should be available. Proderco (Secretaria de Agricultura y Ganaderia) have been asked to undertake the appropriate analysis.

Conclusion – the *total average rainfall* pattern in the region ranged from 900 mm to about 1,200 mm. It can be concluded that this is satisfactory, however it would be advisable to give preference to the areas of higher rainfall. Areas that are at the minimal level could suffer some impact on cropping in occasional years if rainfall is well below average.

The *rainfall distribution* shows a near dry period for 5 months during the flowering and fruiting period for cashew. The consultant had no daily distribution data but was advised by anecdotal evidence that any showers during the dry season tended to be light showers only. This rainfall distribution would be suitable for cashew.

Comment – temperatures. The averages ranged from minimums of 15.3 degrees C at Villa Humada (830 meters)to maximums of 33.3 degrees C at Las Acasias (490 meters). The overall average at El Piyonalt (440 meters) during the cashew development and fruit set (December – March) is 24.5 degrees C compared to an ideal 27 degrees C. The conclusion is that the area is suitable for cashew but attention should be taken to avoid areas of excessive altitude.

The overall conclusion must await the results of the soils analysis, however on the other criteria the area can be considered suitable, but attention should be given to minimizing the effect of the limiting factors of minimum rainfall and low temperature (high altitudes).

SECTION I

Introduction

A. Impact of Hurricane Mitch

In October 1998, Hurricane Mitch, the strongest and most damaging storm ever to hit Central America caused enormous damage in Honduras and other countries in the region. In Honduras high winds and torrential rain caused catastrophic floods and landslides which killed 6,600 and injured 11,998 people. In addition 8,052 were missing and 1.4 million people homeless. Other reports indicated that large sections of infrastructure were destroyed together with 70 percent of the crops.

The impact of Hurricane Mitch was felt all over Honduras, however there were severe consequences in the southern provinces of Choluteca and Valle, the major cashew producing areas of Honduras. In particular the Choluteca River overran its banks and dumped large volumes of sand and stones in the city of Choluteca and surrounding farmlands.

B. Assistance in Response to Hurricane Mitch

Through the Policy Enhancement and Productivity Project (PEP), Chemonics International Inc. is working in close collaboration with four subcontractors to deliver effective technical assistance designed to contribute to the recovery and growth of Honduras's post Mitch economy by promoting economic policies to increase productivity and reduce poverty.

The consultant has been commissioned by the contractor to undertake a study into the cashew industry, particularly in the main producing areas of Choluteca and Valle Province. The terms of reference for the assignment are included in Annex A. The main objectives of the study follow:

1. Assess the cashew production, processing and marketing conditions in the Choluteca area.

2. Assess potential of the Danlí area to compete in the cashew industry.

3. Prepare an action plan to increase export sales of cashew products and recommend follow up technical assistance to supplement the operations of the plan.

The consultant undertook four days of market research at his home base before working on site in Honduras from September 24 to October 15, 2000. During this period the consultant visited the producing areas in Valle and Choluteca Provinces and inspected plantations, processing facilities and marketing operations. The Chemonics staff in Honduras assisted him. The consultant also gave a joint seminar (with the FINTRAC consultant) to growers, processors and related industry associations .

C. Overview of Honduras

C1. Economic and Geographic Overview

Honduras is the second largest country in Central America (after Nicaragua) with an area of 112,492 sq km. It is a mountainous country with 65 to 80 percent of the total land area composed of rugged mountains ranging from 300 to 2,850 meters high with many highland valleys. Lowlands are found only along north and south coasts and in several river valleys.

The mountainous interior is much cooler than the coastal lowlands. The capital city Tegucigalpa (population 785,000) at an altitude of 975 meters has a temperate climate (25/14 degrees C in January and 30/18 degrees C in May). The coastal plains are hotter and more humid. The Caribbean coast has rainfall year round with the wettest months September to January. On the Pacific coast (Golfo de Fonseca) it is hot with a relative dry season between November to April but the amount and the timing of rain can vary between years.

In economic terms Honduras is one of the poorest countries in Central America (GNP per capita US$ 760) where only Haiti and Nicaragua are poorer. Following are several important statistics showing Honduras' human and economic profiles:

Human Profile

Total Population:	6.3 million
Population Growth Rate:	2.8 percent
Urban Population:	51.7 percent
Poverty:	53 percent below poverty line
Illiteracy Rate (male/femail 15+):	26 percent

Statistics from the World Bank (1999)

Economic Profile

Structure of the Economy

Agriculture:	16.2 percent
Industry:	31.9 percent
Services:	51.9 percent

Consumer Prices Change:	11.6 + percent
Total Exports FOB:	US$1,304 million
Total Imports:	US$2,718 million

Statistics from the World Bank (1999)

Agricultural Production & Exports

Agricultural Production 1999:

Bananas:	860,545 MT
Coffee (green):	164,136 MT
Cereals:	562,226 MT
Sugar Cane:	4.285 Million MT
Oil Palm Fruit:	521,948 MT

Agricultural Exports 1998:

Bananas:	US$116.2 Million
Coffee (green):	US$419.3 Million*
Sugar	US$9.1 Million

*Coffee production levels 1997/1999 were similar, however, high coffee prices in 1998 raised incme to US$419.3 million, up from US$263 million in 1997. In contrast FAO records raw cashew nut production in Honduras at about 400 MT and the value of cashew kernel exports at about US$90,000.

C2. Cashews in Honduras and Central America

Central America has in parts a suitable climate and soils for cashew production, however currently the total cashew crop in the region is an extremely small part of world production – about 0.5 percent. El Salvador, Guatemala and Honduras each have small local industries while there are minor plantings in Costa Rica, Nicaragua and Panama.

El Salvador is the largest producer in Central America with an industry that commenced in the 1960s. The current crop is estimated at 1,500 to 2,000 MT of raw nuts. Of this total about 600 to 800 MT is grown at Coralama and nearby cooperatives in San Miguel Department. Coralama has been growing and processing cashew under organic certification of Organic Crop Improvement Association (OCIA) for sale to the North American market. The European Union (EU) also supports more recent cashew plantings in San Vincente department. In El Salvador about 150 MT of raw nuts are processed for sale as organic kernel, while about 600 MT raw nuts are exported to India for processing. The balance of the crop is locally processed for sale to the local market.

In Guatemala some small-scale plantings were made in the 1980s and the current crop is estimated at about 200 to 300 MT raw nuts. In Honduras some 5,000 hectares of cashew were originally established mainly in the Valle and Choluteca provinces. FAO reported a crop of 800 MT raw nuts in 1986, a more recent estimate of crop is about 1,000 MT. It is reported that currently there are about 2,000 hectares of mature trees in need of rehabilitation and 400 hectares of new plantings.

Nicaragua has some small-scale plantings and the estimated crop is perhaps 200 MT raw nuts.

D. Review of World Cashew Market

D1. Introduction to Cashew

Cashew (Anacardium ocidentale L), is a tree of the dry tropics which originated in northeast Brazil. It was spread by the Portuguese in the 16th and 17th century to East Africa, and India (Goa) and later mover to many tropical countries.

The cashew is unique in that the tree produces a nut that is external and is attached to the fruit. The nut is processed to release the *kernel* which is the main product that is utilized as an edible nut. The shell of the nut also contains *cashew nut shell liquid* (CNSL) - a natural phenol that can be collected during processing as a by-product and has a number of industrial uses as a heat resistant material. The fruit, also known as the *cashew apple* has a number of uses including eating as fresh fruit by the growers to a number of industrial uses where conditions allow (fruit juice etc).

Cashew is grown in a large number of countries, production is largely by small holder farmers. Only in Brazil are there some large scale plantations, but even there small holders are important. Generally world cashew production has been with low technology using seedling trees and few inputs. Results are also low however because of low labor costs in growing countries the returns have been adequate.

In response to rising costs, some countries are making efforts to increase returns. This involves an improvement in the technology of growing cashew using selected grafted trees and more inputs.

D2. World Cashew Production

The major expansion of the industry occurred after World War II, by 1949 world production was about 100,000 MT of raw nuts, of which half was shipped from East Africa to India for processing. During 1950s' and 60s there was a major expansion of crop in Mozambique and Tanzania. By 1965 these two countries were producing 75 percent of world production and exporting 200,000 MT to India for processing.

In the mid 1970's civil war in Mozambique and internal political problems in Tanzania led to a massive drop in crop collection. A combined crop of 340,000 MT in mid 1970s was reduced to less 100,000 MT by 1980. The resulting world crop shortage led to a price increase of 300 percent in processed kernel. The fundamental problems in supply in East Africa and the strong price signals initiated a massive response from other existing and potential new cashew producing countries.

The production changes have been significant in the past 25 years. The world crop prior to the disasters in East Africa in the mid 1970's was about 500,000 MT. This fell to 350,000 MT by 1980, but as a result of the increased plantings since the late 1970's the world crop in normal conditions now approaches 900,000 MT

The current major producers of cashews are India, Brazil and Vietnam. Tanzania has recently regained its role as a major producer. In normal conditions these four countries would produce 75 percent of world production. However in the 1998-1999 period India, Brazil, and Vietnam almost simultaneously produced poor harvests due to inclement weather and a variety of other reasons.

These were the crops in Brazil (September 1998) India (March 1999) and Vietnam (March-April 1999). This shortage of supply caused a period of significantly increased world prices from April 1999 to about March 2000 when better crops brought prices back to 'normal levels'.

The world crop for the 1999-2000 period will probably be about 900,000 – 950,000 MT.

Exhibit I-1

World Production (000 MT Raw Nuts)

	94/95	95/96	96/97	97/98	98/99
India	310	280	320	280	135
Brazil	190	180	200	175	100
Mozambique	54	40	40	50	50
Tanzania	40	39	47	50	100
Vietnam	40	60	150	120	70
Kenya	18	24	20	20	20
Guinea Bissau	20	25	25	31	30
Nigeria	15	13	15	15	18
Indonesia	30	35	40	50	20
Others	50	55	60	90	90
Total	767	751	917	861	633

Notes:
1. Others include Sri Lanka, Thailand, Madagascar, Togo, Ivory Coast, Benin, El Salvador, Venezuela, Guatemala, Philippines, etc.
2. There is no accurate published data on world production – the data presented above are estimates based on trade sources. Of the total world crop, perhaps only about 65 percent enters the world trade market. Some part is consumed in the villages while another part is processed locally and sold as product in the local retail trade. There is a large domestic market in India and in some Southeast Asian countries.
3. India's harvest during the March-April period, Vietnam's is during the April-June period, and Brazil's is during the September-November period.

D3. Cashew Processing and Indian Raw Nut Trade

Up to the 1960's virtually the whole world's crop was processed in India where very cost efficient hand processing methods had been developed. During this time the Indians controlled the international trade in processing and marketing of cashew. Apart from their own crop they imported increasing volumes of crop that was becoming available from Mozambique and Tanzania. By 1960 India processed and marketed 95 percent of all traded product.

The dominance of the world trade by India was sustained by the scale of the raw nut import program, especially from Mozambique and Tanzania which peaked at about 200,000 MT in 1972. At this time the total world crop was less than 400,000 MT. During the 1960's and 1970's newly designed mechanical processing factories were installed in East Africa and together with the reduction of crop in those countries encouraged the Indians to expand their local production as well as diversify their sources of raw nut imports. In recent years Vietnam especially, Indonesia and West Africa have become more important sources of raw crop. However this trend is now changing as Vietnam is now encouraging local processing.

Exhibit I-2

Indian Raw Nut Imports (000 MT Raw Nuts)

	1994*	1995*	1996*	1997*	1998/9**
Country of Origin					
Tanzania	55,658	51,346	82,384	42,015	N/A
Mozambique	7,665	7,665	27,197	14,737	19,124
Vietnam	43,898	14,109	nil	nil	nil
Indonesia	25,821	13,706	16,563	N/A	14,218
Guinea Bissau	31,410	29,156	9,180	40,498	18,573
Ivory Coast	19,128	23,793	10,814	31,197	21, 237
Others	80,546	53,650	56,208	75,207	107,534
Total	276,369	193,125	202,346	209,598	180,686

* January to December ** April to March
Source: The Cashew (India)

Exhibit I-3

Raw Nut Import Prices (US4 c&f)

Country of Origin	*1993*	*1994*	*1995*	*1996*	*1997*
Guinea Bissau	1,133	1,050	1,192	1,111	925
Indonesia	902	979	1,068	1,097	958
Ivory Coast	944	920	900	876	752
Mozambique	796	700	930	938	903
Nigeria	709	786	789	780	607
Tanzania	777	860	915	1,032	950
Vietnam	832	1,069	900	N/A	N/A

Note: The average price for imports from all in 1998-1999 was US$1,009
Source: The Cashew (India), prices were converted into US$ by the consultant.

The processing industry in India employs about 300,000 people (mainly women) and is estimated to have a capacity to process 500,000 MT raw nuts p.a. As domestic production and imports have not reached this level the industry has previously operated well below capacity. However this spare capacity is being reduced as Indian local production expands.

In Brazil the processing industry has developed to process the whole crop mainly using a mixture of mechanical shelling and semi manual methods and this development has been aided by a total ban on raw nut exports. In Africa (Tanzania/Mozambique) and SE Asia (Vietnam) there is a mixture of local processing and raw nut sales to India. Mechanical shelling especially using Oltremare and centrifugal methods have been extensively used in Africa while in SE Asia semi manual shelling is more popular. While these producing countries would no doubt prefer to process all their crop and sell kernel they face very strong price competition from the Indian raw nut trade who probably have an advantage of about US$ 100 to US$ 150/MT that reflects their

cost efficiency in processing. Therefore in most of these countries the development of the local processing industry has been assisted by export taxes (usually 10 to 20 percent) on raw nut exports.

However the prices paid by the Indians for raw nut imports could be reduced in the future if their local production meets their objectives to meet local processing requirements. However opinion is divided if this point can be reached in the foreseeable future.

D4. Kernel Supply

India was originally the dominant supplier of kernel to the world market but in the past 15 years Brazil has also become a major exporter especially to the U.S. market. Tanzania and Mozambique were previously important suppliers but are now relatively small.

In recent years Vietnam has become a major source of kernel, as the government has assisted the development of the local processing industry by imposition taxes on the export of raw nuts. In 1996 the tax was 4 percent. This was raised to 14 percent in 1997 and finally there was a total ban on exports imposed 1998.

Exhibit I-4

Exports of Kernel (MT)

	1993	**1994**	**1995**	**1996**	**1997**
India	62,817	78,266	72,436	70,190	74,863
Brazil	29,914	22,709	31,896	36,229	36,297
Vietnam	5,512	9,528	18,162	26,111	32,894
Mozambique	2,654	892	453	**	**
Tanzania	45	nil	113	**	**
Others	2,858	4,996	5,184	11,365	11,343
Total exports	97,890	106,873	128244	143,895	155,399

Source: Mann Producten Rotterdam
Note: Total kernel exports in "Others" category are probably underestimated by 2,000 to 3,000 MT as some minor exporters may be missed. In addition, information from The Cashew (India) shows kernel exports from India for the period April 1998 to March 1999 to be 75,026 MT.

The following estimates are made for 1998 for the trade flows between supplying and consuming countries. Brazilian production: 75 percent to U.S., 10 percent to Canada; and 10 percent to Europe. Vietnamese production: 25 percent to U.S., 20 percent to Australia, and 15 percent to Europe. Production from India: 45 percent to U.S. and 30 percent to Europe. In addition to the major traded markets there is also a very large consumption of cashew at the retail level in India supplied from domestic production estimated to be about 25,000 MT. There are also internal markets many Southeast Asian countries.

D5. Kernel Consumption

The total annual world trade in kernels is now above 130,000 MT. The United States is the dominant market and takes about 50 percent of world trade. The other important markets are

United Kingdom, Netherlands, Canada, and Japan. China has become a significant market in the past few years.

Exhibit I-5

Kernel Imports (MT)

	1993	1994	1995	1996	1997	1998
USA	59,954	61,632	52,677	59,029	65,108	64,405
Netherlands	8,593	13,354	8,552	12,409	14,065	16,313
Germany	6,892	8,412	9,642	10,821	11,683	4,412
Canada	5,537	4,781	4,151	4,537	5,217	--
UK	6,510	6,019	5,127	6,374	7,032	6,313
Japan	5,622	6,193	6,420	6,556	6,578	--
Australia	3,771	4,488	5,000 *	5,000*	5,000 *	--
China	4,990	7,509	14,995	17,513	20,417	--
Others	10,606	12,477	23,753	27,860	21,606	--
Total	107,485	117,356	125,317	145,099	156,760	
re-exports	6,265	10,154	13,000*	16,000*	18,000*	
Net imports	101,220	107,202	112,317	129,099	138,760	

Source :Mann Producten Rotterdam
Note: Re-exports occur mainly from Rotterdam, Netherlands and also from Hamburg, Germany and London, UK.
*Shows estimate of volume of re-exports.

D6. Kernel Grades and Prices

As the United States is the world's largest importer it is the New York market the effectively sets the world prices in U.S. Dollars per pound. As India was until relatively recently the world's dominant supplier, it is the Indian system of grading kernel that is most widely used in the trade and is officially recognized by the industry. In the Indian system kernels are characterized by *quality* and *size*.

Quality

White: white, off-white with no blemish
Scorched: light brown, fain spots allowed.
Dessert: Shriveled, scorched, spots allowed.
Note: The quality grades can be further graded as whole kernel or brokens.

Size - Wholes

Grading of whole white kernel is based on a count per pound as follows:

W450	400-450 kernels per pound
W320	300-320 kernels per pound
W240	220-240 kernels per pound
W210	200-210 kernels per pound
W180	170-180 kernels per pound

Scorched whole kernel is sometimes graded on a count per pound, but often these grades are mixed. Dessert whole kernel is usually graded as one grade.

Size – Broken

Graded by size and can be further classified by white, scorched, or dessert.

Splits	Lengthwise split in kernel
Butts	Crosswise split in kernel
LWP	Large White Pieces
SWP	Small White Pieces
BB	Baby Bits

There are about 30 possible grades of kernel, however the W320 grade (300 to 320 whole white kernel per lb) is used as the benchmark for all price quotes as this is the majority grade by volume (about 40 percent) that is supplied to the world market Larger white whole grades are sold at a premium while scorched, dessert, smaller wholes and broken grades are sold at a discount.

The Brazilian cashew trade has it's own system of grading kernel which has similarities to the Indian system. In particular Brazil produces a greater volume of larger kernels and this is reflected in the number of large kernel grades. The table below shows a list of commonly used Indian grades and the Brazilian equivalents

The following table of a recent quote from a major trader demonstrates the relative prices for some of the most frequently traded grades as follows. Of course the relativities shown in this table may change in different market circumstances.

Exhibit I-6

Prices

Grade	Description	Price (US$/lb.)
210	white whole	2.90
240	white whole	2.60
320	white whole	2.35
450	white whole	2.14
SW	scorched whole	2.12
FB	fancy buts	1.80
FS	fancy splits	1.75
LWP	large white pieces	1.60
DW	dessert wholes	1.60
SWP	small white pieces	0.70

The benchmark price usually reflects product from group shippers in India - kernel from other sources may receive premiums or be discounted depending on previous quality and reputation.

For many years almost all crop from other sources was discounted in comparison with Indian prices. However in recent years the Vietnamese processing industry has earned a reputation for good quality - mainly because of the high standards of product grading carried out. As a result and based on market experience in Australia some traders are now willing to pay a premium of perhaps 2 /3 cents /lb from some Vietnamese processors

Prices are set by basic supply and demand factors, however, there are a number of micro factors that can lead to short term instability:

- prospects of harvests from different supplying countries as perceived by individual shippers and buyers
- current stock levels
- transportation problems
- prices of competitive nuts, especially almonds and to lesser degree other nuts.
- political considerations, previously Russian purchases from India could destabilize the market

In particular it is the incomplete knowledge on future crop expectations frequently due to a lack of accurate data that can cause price fluctuations.

In the period 1975 to 1980 kernel prices increased by 250 percent reflecting the shortage of crop brought about by the fall in production in Mozambique and Tanzania. However, since that time prices have generally remained in the range of US$2.35 to US$ 2.70 per lb for W320 grade kernel - apart from temporary sudden increases due to crop problems in a major producing country.

Exhibit I-7

Kernel Prices (US$ per lb.) W 320 Grade

Year	US$
1985	2.40
1986	3.17
1987	3.18
1988	2.98
1989	2.46
1990	2.39
1991	2.75
1992	2.47
1993	2.38
1994	2.40
1995	2.56
1996	2.68
1997	2.50
1998	2.47
1999	2.95

Source: 1985 to 1997 Mann Producten Rotterdam, 1998 – present trade sources.

As demonstrated in Exhibit I-7, in the period from March 1999 prices rose significantly due to the poor crops in the three major producers India (March 1999), Brazil (September 1998), and Vietnam (April 1999). The W 320 price was US$ 2.52/lb in February but had risen 24 percent to US$3.13/lb by May when the full world crop implications were apparent to the market. Prices have now eased again as the Brazilian crop (September 1999) and Indian and Vietnamese crops (March 2000) appear to be returning to normal volumes.

Exhibit I-8

Kernel prices per lb W320 grade (Jan. to Sept. 2000)

Month	US$
January	2.75
February	2.75
March	2.51
April	2.55
May	2.57
June	2.49
July	2.45
August	2.45
September	2.40

Source: Trade sources (Amberwood Trading, Brazil and CBC Corp India

D7. Outlook for World Market

World raw nut production has expanded perhaps 100 percent over the past 20 years. The high prices in the period up to the early 1980's encouraged major plantings in both existing and in new producing countries and these trees are now mature.

While in recent years cashew prices have been lower at times on average, however small holders in many countries have continued to plant cashew trees at a more modest rate because they have perceived that it is profitable to do so given the alternative options they may have. In the previous major producers of Mozambique and Tanzania there has also been significant aid from donors to assist these countries to correct their technical problems in the industry and at least regain a better part of their former productive capacity.

Virtually all of the plantings world wide to date have been of seedling trees with their generally poor yields and variable nut quality. There is now a second way of expansion commencing which involves the application of new technology especially in the use of selected grafted cloned trees which will achieve higher yields and improved nut quality. So far this development has only commenced in India to any degree where over 20 years of research is now culminating in the production and distribution of large numbers of grafted trees for planting by small holders. Assuming these trends continue and expand this suggests that the cashew crop will continue to expand at a minimum of 5 to 10 percent per year.

However it also has to be emphasized that cashew is grown as a rain fed crop grown in a wide range of tropical countries, sometimes in countries with unstable economies and government's. The background nature of the growing conditions suggests that the potential always exists for major disruptions to supply if problems occur in a major producer. The example still remains of the 60 percent reduction in world supply of cashew by the collapse of the cashew industries in Tanzania and Mozambique in the late 1970's.

On the demand side, consumption has shown the capacity to expand significantly encouraged by the moderate cashew prices in most of the past 15 years. This consumption growth has occurred mainly in the major established markets. Exhibit I-9 describes consumption averages in several major markets.

Exhibit I-9

MT Kernels

Market	1989-1991 (Average)	1995-1997 (Average)	% Increase
United States	48,480	58,938	22%
Australia	2,940	4,800*	70%
Canada	4,117	4,635	13%
United Kingdom	4,938	6,117	25%

* 1998-1999 consumption in Australia is 5,500 MT, a further 14% increase from the 1995-1997 average.

Provided moderate cashew prices prevail the market expects the consumption growth in the major markets to continue - it should be noted that per capita consumption of cashew in Australia already the world's highest was still only 305 grams/person in 1998-1999.

The second source of future increased demand for cashew will come from greater consumption in India and South East Asian countries. Trade sources have estimated that the domestic market in India is growing very significantly and currently estimated at about 25,000 to 30,000 MT - the second largest market in the world after the United States.

The conclusion is that apart from temporary high prices (US$2.80/lb W320 and above) due to occasional poor crops from climatic factors, demand and supply factors should remain approximately in the current balance and current prices should be maintained in the US$2.30 to US$2.65/lb W320 for the immediate future.

D8. Organic Cashew Market

The organic cashew market is a relatively recent phenomenon and there is little firm data on its parameters. However the following information is available:

- The organic market is currently very small, perhaps a total of 500 MT kernels, or 0.05 percent of world consumption.

- The organic market is currently growing at 10 to 15 percent, with the major demand being Europe (250 MT), North America (200 MT) and elsewhere (50 MT). In North America distribution is mainly through medium/large traders while in Europe it is through smaller natural health food shops. In Europe the importers include Horozon Natuurvoeding (Holland), Rapunzel and Care (Germany) and Bond Commodities (UK). In North America they include Ports West (Canada) and Nutta Once Again Butter (USA).

- The current price premium for organic cashew is about 50 percent over normal product, although it can be as low as 20 percent. In general organic product is not graded to the standards required by the mainstream market.

- There are a number of organizations that can provide official certification for the production of organic cashew, these include OCIA International in the United States and a handful in Europe that are acceptable to European Union (including ECOCER). The product of CORALAMA in El Salvador is certified by OCIA and sold in the Canadian market by Ports West of Victoria BC.

- There is some volume of cashew that is not officially certified as organic being sold as 'organic or naturally grown cashew'. It is unknown what proportion of the organic market is supplied from this source.

D9. Other Cashew Products

D9a. Cashewnut Shell Liquid (CNSL)

CNSL is a natural phenol (90 percent anacardic acid) contained within the shell and is a by-product associated with the processing of cashew. The volume of CNSL contained in the shell may vary but in practice some 8 to 10 percent can be recovered depending on raw nut quality and processing method used.

Ninety percent of the CNSL collected is processed into resins for use as fillers in auto brake linings and clutch facings. Other minor uses include marine paints and varnish. There are competitor products to CNSL in the auto industry, some of which - the synthetic phenol's - out perform CNSL. However the manufacturers prefer to use CNSL as long as the price is competitive.

The major markets for CNSL are the United States, United Kingdom, Japan and South Korea. Total world supply of CNSL is estimated at about 45,000 MT with an average price of about US$ 300/mt. Brazil is the major supplier (about 25,000 MT) because the processing system they use (hot oil bath) automatically extracts CNSL. In India and in some other countries only a small fraction of the potential CNSL is collected because of the different systems of processing used. However if the price of CNSL increased significantly these processors could change their processing methods and collect CNSL - this acts as an automatic brake on world prices.

D9b. Cashew Apple Products

The cashew apple is 5 to 10 times the weight of the raw nut and is very high in both Vitamin C and B12.

	Apple	orange	lime
Vitamin C (mg)	186 – 240	49	45
Vitamin B12	99 – 124	30	trace

Source J.G.Ohler

The cashew apple is a valuable by-product. In many countries especially in Africa it is consumed as fresh fruit. In Brazil there is a major juice industry mainly produced on the larger cashew plantations where the juice processing is undertaken along side the cashew nut processing. In India a number of different products are made including whisky (Feni) in Goa.

The Central Food Technology Research Institute in Mysore, India has listed the potential products that have been made from cashew apples;

1. Juice, sweetened, spiced, carbonated
2. Juice blends
3. Syrup
4. Wine
5. Vinegar
6 Jam
7. Chutney

SECTION II

Profile of Cashew Industry in Honduras

A. Background

Cashew is mainly grown in the departments of Choluteca and Valle with about 90 percent of production concentrated in the southeastern area of the department of Choluteca, in the area *bordered* by the villages of El Triunfo, San Benito and Namasigue. In the period 1972 to 1986 some 5,000 hectares of cashew were planted from seed by 75 campesino groups however a significant area was lost in the 1980's and early 1990's due to fire and neglect. However since then an unknown area of new plantings have been made. There are no accurate figures on the current area under crop but it is estimated at about 2,500 + hectares, of these 80 percent are mature trees of 20 to 30 years old and the balance are immature trees The current crop is estimated at about 1,300 MT raw nuts and this could be expected to increase slowly as the new trees come on stream.

The industry is currently structured at two levels:

1. The farmers who grow cashew and are formed into groups or associations.

2. The processors/marketers of final product. This group includes two cooperative type organizations (*Union Nacional de Campesinos*, Sureñita) and a private company Techni Servicios Monjaras (TSM - owned by Mario Argenal).

B. The Producers

There are possibly a total of 500 cashew farmers in the project area who on average each have about 10 Mz of cashew trees. In addition on average of 10 – 15 individual farmers have combined to form groups, the major purpose of group is to assist in the selling their combined crop. However it appears at times some members within a group may make independent decisions about the disposal of their crop. In practical terms the farmers (farmers groups) have only three outlets for their crop – the three recognized processors (UNC, Sureñita, TCM). There is also a small backyard processing industry operated in private dwellings, however the volumes here are very small.

Based on current yields (650 kg/hectare raw nuts) and prices received from the processors ($0.35/kg), the average farmer would earn an annual income of about $ 1,137. While the yields could be considered consistent with the prevailing level of genetic material and technology used, the price received would be considered low, (-25 to 50 percent) of would be achieved by cashew farmers in other countries. However this low return to the farmers must be balanced by the fact that many of them are involved (either directly or via their wives) as cooperative owners in the processing facilities and would eventually gain margins once their crop is processed and sold.

C. The Processors & Marketers

There are three processor/marketing groups who each claim to have a stable 'captive' group of farmers and farmers groups who supply them with crop. However, it would appear that these alliances between farmers and the processors are not always solid and changes in supply patterns occur as evidenced by the competition to purchase crop by the different procesors. A further factor is the ownership links between the individual farmers and their participation in the processing/marketing function via their membership on the Cooperatives (UNC, Sureñita). In the case of Sureñita the membership in the cooperative is through the farmers' wife.

D. Union Nacional de Campesinos (UNC)

D1. Descriptions of Operations

UNC consists of 32 groups with a total of 406 individual farmers who grow cashew on 1,200 hectares (700 ha mature trees, 500 ha young trees) hectares of land and jointly own a processing factory. Of this area 70 percent (600 ha) are mature trees and 30 percent (250 ha) immature trees. There have been about 250 hectares of recent plantings.

In 2000, UNC purchased the crop 502 MT of raw nuts from the farmers at a price of $316/MT. However because of a shortage of working capital UNC was only able to process 68 MT (14 percent) into kernel and had to sell the balance 434 MT (86 percent) as raw nuts. Of this 272 MT was sold to Pronuga Realhulen in Guatemala for $550/MT CIF, and 162 MT to both Sureñita/Mario Argental presumably at similar prices. Apparently the deal with Pronuga Realhulen was done both because of the quick payment (2 days) and because they would accept a lower standard of product (15 percent defective product, however any increase above 15 percent would lead to a corresponding percentage decrease in price). A higher price ($ 700 – 750/MT) could have been achieved from an Indian trader (Vijlaxmi) but their terms involved payment in 45 days and they had higher product standards (10 percent defectives). The 68 MT of raw nuts processed were sold as kernel mainly to Casa Bazzini in El Salvador. The prices received for kernel ($2.65-2.75/wholes) indicate prices for the normal market as compared to the higher priced organic market. The gross returns from processed kernel are equivalent to $735/MT.

The processing factory was set up in 1998 with financial assistance from Spain. The buildings and equipment in this factory would be considered rather basic in comparison with standards of the international market. The factory uses a processing system employing a combination of 'hot oil bath' and manual shelling. It employs about 55 workers and in its current configuration it has the capacity to process about 2 MT to 300 MT raw nuts p.a. However in the present year the factory only worked for two months to process the available crop.

UNC employs the local consulting company ECOAGRO as advisors and managers for their cashew operations.

A brief summary of the estimated costs and returns per MT raw nuts for 2000 could be summarized as follows.

(1) Gross income from selling raw nuts (Guatemala)			$550/MT
Less:	purchase cost	$ 316/MT	
	sacks, drying, cleaning	$ 51/MT	
	freight, insurance, taxes etc (to effect sale)	($ 44/MT)	($ 411/MT)
		net return	$ 139/MT
(2) Gross income from processing (EL Salvador, Costa Rica)			
	kernel sales (fob) El Salvador, Costa Rica)		735/MT
less :	purchase cost	$ 316/MT	
	sacks, drying, cleaning	$ 51/MT	
	processing labor cost	$225/MT	($592/MT)
		net return	$143/MT

The net return of about $140/MT raw nuts for UNC is not good. If we include other the costs (e.g. ECOAGRO) then the return is lower. In particular the gross income from processing of $735/MT raw nuts must be compared to a standard of a gross return of at least $ 1,100/MT where we have similar prices as well as both a reasonable standard of crop and processing efficiency.

D2. Problems at UNC

The problems at UNC are summarized as follows:

- *Shortage of working capital.* This forces UNC to make sales of raw crop for immediate cash to finance operations, including some processing of the crop. However, by having to make sales on these terms UNC also 'loses' money as it has to accept a lower price. For example, this year UNC 'lost' $ 215/MT raw nuts when it sold 272 MT of raw nuts to Pronuga Realhulen for a return of $506/MT of near immediate cash ($137,632) rather than accept a deal of $725/MT ($197,200) from Vijalaxmi because they were unable to meet the terms of LC payment in 45 days.

- *Poor results from processing* . For example, at similar kernel prices achieved by UNC a reasonably efficient factory with a reasonable quality crop would achieve a gross return of $1,000/MT to $1,100/MT raw nuts or more. In comparison UNC achieves $ 735/MT.

The low return from processing is evidenced by the low quality of the output from the processing factory, specifically this demonstrated by:

- A low recovery rate of 15.2 percent (percentage of final product achieved from raw nuts). A more reasonably achievement would be over 20 percent.

- A modest rate of 51.2 percent whole kernel (acceptable level 55 to 60 percent), and slightly higher rate of scorched kernel of 12.5 percent compared to acceptable level of less than 10 percent.

The reasons for this poor performance from processing could be:

- poor genetic characteristics of some of the purchased crop

- poor crop drying and storage method

- poor processing methods that cause damage and waste - UNC acknowledges that lack of worker experience is a major factor and the lack of equipment and standard of facilities generally are very poor).

- high levels of insect or disease damage in the crop (some level of chinche - *Leptoglossus sp* - damage was seen by the consultant).

D3. The Way Ahead for UNC

During the consultant's assignment, UNC presented a plan for the improvement of their business. This plan concentrated in the following three areas:

1. *Restructure of farmer groups*. Acknowledging that a shortage of working capital is a major problem, UNC proposes to reorganize its base of farmer/members. Apparently it was found that some farmers within the existing groups were either 'unreliable' or 'unproductive'. UNC's objective now is to pick the best individuals from the existing 402 farmers in the 32 groups and reform them into a new organization that has a legal status. The expectation is that the group will be more productive giving a higher quality crop and able to have access financing to resolve the working capital shortage.

   Comment: This would appear to be a progressive step and should help UNC to overcome its working capital problem.

2. *Plan for a new plantation* (appendix 4). UNC apparently has spare land suitable for cashew and has prepared a plan to plant a new 1,000 hectare plantation. The total estimated cost over the three year development phase is presented below:

Donor Contribution (in cash)	$290,000
UNC Contribution (office, management)	$20,000
Producer Contribution	
Land - $200,000	
Development Labor - $130,000	$330,000
Total	$640,000

UNC apparently would plant the new plantation by seed since there is no current source of superior genetic material or grafted trees in Honduras. The yield projections for this new plantation given to the consultant were a maximum yield of 900 kg raw nuts/ hectare, a figure that is higher than current practice, but not necessarily unachievable.

A simple cash flow analysis (below) developed by the consultant using a notional value of $500/MT raw nuts shows a return of capital in 8 years.

Category	Costs	Revenue (US$)	Balance
Year 1-3 - Development	$640,000		
Year 4 - Annual Maintenance	$60,000		
Crop 250MT @ 500/MT		$125,000	($575,000)
Year 5 – Annual Maintenance	$60,000		
Crop 386MT @ $500/MT		$193,000	($382,000)
Year 6 – Annual Maintenance	$60,000		
Crop 454MT @ $500/MT		$227,000	($155,000)
Year 7 – Annual Maintenance	$60,000		
Crop 545MT @500/MT		$275,000	$120,000
Year 10 – Annual Maintenance	$60,000		
Crop 900MT @ 500/MT		$450,000	$390,000

Comment: The development of a new 1,000 hectare would be a major long term investment and it would be unwise to make this investment using the same technology (genetic material) as was used in the past. It should be a priority to ensure that this project only moves forward when superior genetic material is available, even if this causes some delay.

D4. Technical Improvements in Processing

UNC clearly recognizes that its factory is poorly equipped and that its labor force in not well skilled. This is mainly due to the fact that the processing function has only been operating on a part time basis for the past two years. UNC has prepared a plan to upgrade its existing factory as shown below. This plan proposes to approximately double processing capacity (350 MT +) using the same processing technology as is currently used by UNC. The budget estimate is included below:

Category	Cost
Capital Construction Extra Storage: $13,000 Perimeter Wall: $8,000 Fumigation Chamber: $4,700 Oil Bath: $2,600 Other: $8,000	$36,300
Processing Equipment Packing Equipment, etc.: $5,800	$5,800
Employment of Staff Factory Manager (1 year): $9,600 Administrator: $4,800 Agronomists, Chol/Valle: $19,200 Secretaries/Drivers: $10,500	$44,100
Guarantee Fund	$30,000
Vehicles:	$21,200
Total	$137,400

UNC proposes that the various contributions are valued as follows:

Contributions	Amount
Donor Contribution (mainly for construction, processing equipment, and management staff)	$102,500 (35%)
Government of Honduras (agronomists – Choluteca/Valle)	$19,200 (7%)
UNC Contribution (support staff)	$15,600 (5%)
**Cooperative Members (value of factory and cashew processing land)	$157,300 (53%)
Total:	$294,600 (100%)

**If we exclude values of existing assets, the required contributions would be: $102,500 from donors; $19,200 from the Government of Honduras for profesional staff salaries; and $15,600 in support staff salaries.

Using a simple cash flow analysis, and using a notional margin of $300/MT raw nuts from processing it can be determined that an investment of cash (donor) and staff support (UNC/Honduras Government) would give a return of capital in four years:

125 MT * $300 /$137,500 = 4 years

Comment: Upgrading the processing facilities should be a major priority, however the UNC does not include a few items that should be included. This includes the hand or foot operated shelling machines that would improve shelling productivity. A purchase of approximately 30 of these machines would cost a maximum of $6,000.

E. La Sureñita

E1. Description of Operations

Sureñita is a group of four cooperatives (Sureñita, Paz y Union, Familias Unidas, Nueva Esperanza) with 154 members and involving 1,800 people. This business includes seven small processing factories, 450 Mz of cashew (410 Mz mature trees and 40 Mz of new plantings).

In the present year, 2000, the cooperative received about 270 MT of raw nuts from its associated growers and purchased 180 MT from UNC. They will process the entire crop which will produce about 80 MT of kernel. Eighty-five percent of the kernel will be sold to Gepa in Germany under their existing marketing arrangements which yield an approximate 30 to 50 percent price premium over normal international prices ($3.335/lb whole grades). Sureñita arranges for contract packaging and sells the balance of its production (12 MT) in the retail trade in Honduras.

The consultant was only able to gain limited data about La Sureñitas' operations, however, they appeared to be operating on a reasonable financial basis. The suggested improvements for La Sureñita in market strategy and processing techniques have been made in the *Brief Summary Report* section.

F. The Market Perspective

F1. International Market

There are three potential markets for kernel available to the processors in Honduras, these are:

- International market (USA, Europe, Japan etc) 99.0 percent of world supply
- Central America 0.5 percent
- Organic cashew market (mainly in Europe and North America) 0.5 percent

Each of the above markets is of different sizes and has a different set of parameters. The three groups controlling the cashew industry in Honduras (UNC, Sureñita, Mario Aregental) all currently operate mainly outside the mainstream international market. Of the 1,300 MT of raw nut produced in Honduras, only about 10 to15 percent is processed for sale to the international

market, the balance is either sold as raw crop or is processed and sold as kernel in Central America. The proportion that is sold internationally is in the European organic or health food outlets which is a small niche market rather than in the mainstream market.

The reasons why the Honduran processors have so far remained outside the mainstream international market follow:

1. Track Record

Major buyers like to do business with suppliers who can deliver what they want and who they can trust. They like to establish relationships with suppliers for the long term. The cashew industry has had a continuing problem for many years of rogue suppliers who sign contracts to deliver product at a certain date and then renege on contracts if prices subsequently move in their favor. In addition some suppliers may deliver product of lower standard than specified in the contract. This could mean inaccurately graded product or pest infestations, both problems that would give significant cost penalties to the buyer.

The problem faced by any Honduran supplier is that they are as yet unknown on the international stage. Therefore they would have the initial task of building up a track record by good performance.

2. Lack of Volume and Grading

The international market (major traders) buy product graded to international specifications and in sufficient volumes of each grade to meet their requirements. There are about 30 grades of cashew of which about 8 to 10 grades are frequently traded. The major traders would normally require product to be carefully graded and supplied in sufficient volumes on a regular basis. This usually involves buying product by shipping container load of either a single or of mixed grades, preferably on a regular basis to suit the schedule of the purchaser. For example, a typical order may be of one shipping container of W320 grade and the buyer may be interested to receive this supply once a month would require the processing of 200 MT of raw nuts. In order to properly meet these sorts of orders would require a processing capacity well in excess of the size of the existing facilities in Honduras. It would also require the Honduran processors to improve their grading to meet the requirements of the market. Currently they only grade into three grades and this would have to increase to perhaps 10 grades to meet requirements.

3. Hygiene

Traditionally cashew processing has operating methods based on developing country hygiene standards, but it sells its product to developed countries that have high food quality standards. Increasingly we are seeing action from buyers and regulators in the buying countries forcing the suppliers to improve their performance to meet the required standards. In practical terms this involves buyers increasingly visiting their suppliers and

undertaking audits on the processing methods and hygiene standards. A typical questionnaire for an audit is shown in Annex J.

The standards of hygiene in processing and packaging of cashew currently required by the international market would involve (1) enclosed factory buildings, clean and free of dust, pests etc.; (2) workers appropriately clothed; (3) cleanliness of the product at all stages; and (4) appropriate fumigation and packaging techniques.

The Honduran factories are substantially of a lower hygiene standard than required.

It can be concluded from the above analysis that the international market will be a difficult market to enter for Honduran suppliers. While the hygiene issues can be overcome with increased invest in the factories (some more than others), the track record issue cannot be attended to unless a start is made in the industry. A start will be difficult to make while the volume remains a hurdle.

F2. Central American Market

The second potential market opportunity for the Honduran processors is to supply kernel to the local Central American market. The advantages and disadvantages follow:

Advantages

1. The prices for cashew in this market are at least the equal and probably above international prices. This anomaly is explained by the fact that the Central American market is too small to be of interest to the international market resulting in limited competition.

2. The relative lack of foreign retail product gives more opportunity for local processors (Sureñita) to move downstream into the retail business and earn an additional margin.

3. This industry will have (most likely) less stringent standards – lower quality product will find a market, and hygiene standards in the processing factory will be less of an issue.

Disadvantages

1. The Central American market for cashew is of very limited size. No accurate data is available, the consultants estimate is perhaps about 500 MT kernel. While this is currently of sufficient size to absorb local production this may change

The conclusion is that the strategy for pursuing this market is clearly sensible, however, there could be some limitations in the future when new production comes on stream. In this event it would pay to prepare for the potential from an alternative market.

F3. Organic Cashew Market

The third potential market available is the organic cashew market. This market is new and small, but is growing rapidly. In many respects the parameters of this market including standards and prices are still developing. In general the market is developing fastest in Europe and to some extent in North America. Most buyers require certification of the product from an appropriate authority (OCIA in USA, or organization approved by EU), although some product is being sold as uncertified organic or natural cashew and receives a similar price premium.

The following advantages and disadvantages are indicated:

Advantages

1. No chemicals have been used in cashew production in Honduras for many years. This should make it easier to achieve official certification from the appropriate organization. (the process takes three years under current OCIA rules).

2 Organic cashew receives approximately a 50 percent price premium over similar grades in the international trade.

3. The consumer market is often in smaller 'health stores' which have less stringent grading standards for product. These standards equate to the current processes used in Honduran factories.

4. The industry operates (apparently) under more relaxed hygiene standards, although this may change in the future.

5. There is a 50 percent price premium for organic product, this higher price helps compensate for the higher labor costs in Honduras as compared to some alternative producers elsewhere.

6. Because of the nature and size of the industry, relatively small volumes are acceptable, and this equates to the scale of operations in Honduras.

Disadvantages/Problems

1. Currently no producers have certification for organic cashew processing. While this has not proved a hindrance to Sureñita as they have a relationship with Gepa in Germany, it could be a problem if they or other Honduran producers wanted to find new buyers.

2. No one knows what the potential size of the market is for organic cashew. In the long term if supply continues to expand rapidly it is possible that the price premiums could be reduced.

3. Apart from existing Sureñita marketing arrangements, the Honduran processors currently would lack sufficient contacts with potential buyers of organic cashew.

The recommended marketing strategy would appear to be to concentrate on capitalizing on the Central American market, while at the same time undertaking the necessary steps to enter the organic cashew market with greater effort.

SECTION III

Cashews in Danlí

A. Background

The relevant authorities in the Danlí area have requested PEP to undertake an assessment of their area to determine the potential for cashew production. To this end PEP included the following language in the terms of reference:

"Visit the Danlí area with assistance from the local chamber of commerce and competitiveness committee representatives to rapidly access the potential of the region to compete in the cashew industry and produce a summary report of the findings".

The consultant spent three days (2 – 4 October) in the area to access the conditions and an additional day for discussion and feedback during the following week.

B. Profile of Danlí

The Department of Danlí (including municipality of Patuca) is an area of 6,458 sq km in the south of Honduras, on the border with Nicaragua. It contains 11 municipalities and the chief town is Danlí, which has a population of about 50,000 people.

Department of Danlí

Total Populaton:	204,314
Number of Households:	40,337
Number of Villages:	169

Rural Pursuits & Land Use

Average Size of Landholding*:		Smallest in Teupassenti 4.69 Mz Largest in San Matias 11,16 Mz
Use of Land:	Annual Crops:	66.5%
	Perennial Crops:	15.5%
	Fallow Land:	5.3%
	Domestic/other:	10.3%
	Forest:	2.5%
System of Cultivation:	Maize:	85.0%
	Beans:	31.2%
	Coffee:	18.7%
	Maicello:	5.5%
	Others:	6.7%

Notes: In terms of "finca" size, it was estimated that about 1.0 to 1.5 Mz would be required to grow sufficient food crops to sustain a family. Therefore, it can be concluded that most "fincas" with reasonable terrain would have additional land available for cash crops.

In terms of the potential returns from crops, the following data shows the situation regarding income from the major crops grown on more marginal land in all of the municipalities. There was no available data to the consultant on what returns would be if the same crops were grown in better conditions, i.e. on better soils or with irrigation. However, the income from other crops on more marginal soils would be a relevant comparison as it would be expected that cashew would be planted on the inherently poorer soils (deep sands) and without irrigation.

Product	Av Yield/Mz (Quintales)	Price/Q (Lempiras)	Total Return/Mz Lempiras	U.S.$
Maize	19.2	111.6	2,142.7	143.8
Beans	8.2	366.8	3,007.7	201.8
Coffee	5.9	1413.3	8,338.5	559.6
Maicillo	10.5	112.9	1,185.5	79.6

Source: Escuela Agrícola Pan Americana, Departamento de Economía Aplicada y Agronegocios

The terrain in the project area consists of many significant ranges of hills, some with steep slopes and both narrow and broader valleys in between. An analysis on the different types of terrain in the area was provided by PRODERCO, *Secretaria de Agricultura y Ganadaria*. It shows a large proportion of the land is as follows:

Municipality	Above 1000 Meters	700-1000 Meters	< 500 Meters
Danlí	22%	42%	36%
Alauca	29%	29%	42%
San Matias	0%	100%	0%
Jacaleapa	67%	33%	0%
Trojes	100%	0%	0%
Teupassenti	53%	16%	31%
Moroceli	37%	19%	44%
Potrerillos	25%	50%	25%
Oropoli	0%	40%	60%
Patuca	0%	38%	62%

The consultant was able to give a quick inspection in the areas of Alauca, Oropoli, San Matias, Teupassenti and the Jamastran Valley. However, the area he was able to view would be a small part of the potential project area.

C. Soils

C1. Preferred Soils for Cashew

In cashew production, soil structure considerations are critical. They grow well on deep, well drained light textured soils (sandy or sandy loam) soils with no restrictions on root development. A soil depth of a minimum of 1.5 meters, with preferably 2 or more meters is indicated. It does not like compacted soils, hardpan, high clay soils, soils with a high water table and certainly not water-logging. Cashew may also grow well on gravelly soils provided there is a sufficient depth to allow good root development. Soil pH is also important as cashew thrives on slightly acid

soils and while a range of pH 5.5 to 6.5 would be highly preferred, cashew can tolerate reasonably well up to a little above 7.0.

In cashew, the soil fertility conditions are of much less importance. In deep sandy soils (usually inherently infertile) the deep rooting behavior of cashew allows the capture of moisture and nutrients in a large volume of soil. If higher performance is required, additional nutrients can be applied. In comparison it is possible that cashew could show nutrient deficiencies when grown on inappropriate soils even if those soils were inherently more fertile.

C2. Soil Structure of Project Area

The soil structures in the more level areas (lower part of river valleys) are the more likely places where cashew would be grown. In these areas it would appear that they are largely of sedimentary origin where over time the main agents of erosion have made deposits of sand, silt/clay in separate areas. In this case these different deposits may of different sizes in area and with different depth profiles, including possibly some areas where sands are over layered with heavier soils and vice versa. This would suggest that finding the correct soils for cashew will involve a care full more inspection to identify potential areas followed by a system of soil sample analysis to delineate the parameters of the soil deposit.

In terms of overall efficiency in the development of an industry it would be preferred to try and identify areas of suitable soil types of reasonable size, however it must be balanced by the need to assist small farmers for whom cashew production can be an excellent alternative crop.

C3. Conclusion

The consultant was unable to undertake any significant soil analysis as no suitable equipment (bareno) was available. However from visual inspections and anecdotal evidence it would appear that significant areas of suitable soils should be available, especially in the Jamastran Valley. PRODERCO of Secretaria de Agricultura y Ganaderia have been requested to undertake the appropriate analysis.

D. Rainfall

D1. Rainfall Requirement for Cashew

Cashew is a crop that likes a well defined wet and dry season. There is currently no definitive information on the water requirement for cashew. It is clear that cashew can grow well in a reasonably wide rainfall regime and in different parts of the world it grows where rainfall varies from 500mm to 2,000mm. However, for cashew to grow well the preferred minimum total annual requirement of about 800mm to 1600mm well distributed during the vegetative phase of growth and a further light showers totally 100mm during the fruit set period.

Apart from total rainfall volumes, the length, timing and certainty of the dry season is important. A dry season of 5 to 6 months during which at most there should be some light showers could be considered ideal. Problems can arise if heavy rains occur during the dry season – especially if this is during the flowering period or even fruit set. This could cause loss of flowers, reduce nut

quality and encourage insect pests at a critical period of the production cycle. In addition if the dry season is very long say 8 months or more then in certain conditions water stress problems could emerge.

D2. Rainfall in Project Area

The data available to the consultant came from five locations, which would be representative of a significant part of the project area. However, from anecdotal evidence it can be concluded that there are also areas within the project area not representative of the data from the five locations.

The average data from five locations in terms of annual total rainfall follow:

Location	Annual Rainfall (mm)	Years of Data
El Piyonal	958.1	1972-1991
Villa Ahumada	1,114.8	1975-1999
Las Acasias	921.2	1983-1991
Teupasenti	1,028.2	1969-1999
Jamastran Valley	1,181.1	1995-1999

It should be noted that Hurricane Mitch in October 1998 did not have a major impact on the average annual data. For example, if the influence of Hurricane Mitch is removed from the figures from Jamastran Valley the average would fall to 1,027.1 mm, a reduction of 13.1 percent. The impact of Hurricane Mitch on the data from all the other stations would be far less because their data is for a much longer period than for Jamastran Valley.

The average data from five stations in terms of the distribution of rainfall follow:

Location	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
El Piyonal	20.2	12.5	11.6	17.4	109.1	174.6	140.0	146.3	164.5	116.9	59.7	32.8
Villa Ahumada	40.7	25.0	18.6	34.5	126.7	175.8	140.1	157.8	194.6	146.2	74.9	44.4
Las Acasias	27.5	14.3	9.3	20.3	112.6	136.2	134.2	144.8	151.3	116.5	64.4	34.7
Teupasenti	22.9	11.4	14.7	40.3	143.0	193.2	131.8	154.1	176.7	159.8	70.7	37.8
Jamastran Valley	27.1	17.7	21.6	36.2	87.7	143.7	149.6	166.6	169.0	216.2	102.8	23.8

D3. Conclusion

The total rainfall pattern would appear to be satisfactory for cashew overall, although it would be better in the areas of higher rainfall. In the areas of least rainfall (800mm – 900 mm average) there could be occasional years when rainfall is below average and cropping could be affected by water stress.

Rainfall distribution shows a comparative dry season for four months (January – April). No day by day rainfall data was available but anecdotal evidence to the consultant suggested that what

rain that does fall in this period comes in the form of light showers rather than very occasional heavy falls. This rainfall distribution would not impose any limitations on cashew production.

E. Temperature

E1. Temperature Requirement for Cashew

The opinion of some experts is that for good growth the recommended daily minimum air temperature should be above 15 degrees Celsius (C) , and the daily maximums should be no more than 35 degrees C. However it should be noted that in its native habitat cashew also appears to grow well when temperatures occasionally exceed 40 degrees C. Another estimate is that 27 degrees C is the ideal average temperature for development and fruit set.

All opinions agree that cashew is negatively effected by low temperatures. In one study vegetative growth was restricted when temperatures ranged from 9 to 24 degrees C over a period of some weeks and when this extended to eight weeks the trees experienced severe leaf drop. Young cashew trees are very susceptible to low temperatures and levels below 5 degrees C for more than a short period can lead to severe leaf drop and the slightest level of frost can kill trees.

E2. Temperature in Project Area

The following exhibit illustrates the average temperature in various locations:

Average Maximum Degrees (C)

Location	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
El Pinyonal	29.2	30.8	33.0	33.9	34.1	31.7	30.3	30.6	31.1	31.0	30.1	29.1
Villa Humada	26.6	28.0	30.3	31.7	31.9	29.8	28.7	28.3	28.5	28.5	27.5	26.7
Las Acasias	28.8	30.6	32.5	33.7	33.3	31.7	29.8	30.3	30.4	30.5	29.6	28.7

Average Minimum Degrees (C)

Location	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Villa Humada	15.3	15.5	16.7	18.2	19.7	19.8	19.2	19.1	18.9	18.3	17.6	16.1
Las Acasias	15.9	15.6	16.5	18.4	20.4	20.0	19.8	19.4	19.7	19.3	18.3	17.2

Average Temperature Degrees (C)

Location	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
El Piyonal	23.7	24.2	26.3	27.8	27.8	26.4	25.3	25.5	25.8	25.6	24.8	23.6

Note: No absolute minimum temperature data was available.

E3. Conclusion

Overall the temperature regime is suitable for cashew, however, it is slightly below what would be considered absolutely ideal. The data from El Piyonal suggests that average temperatures

during the period of development and fruit set (December to March) at 24.5 degrees C is slightly below the ideal figure of 27 degrees C.

In terms of absolute minimum temperatures unfortunately no relevant data was available for analysis. However, it is one area that would need attention so *care must be given to avoiding areas of higher altitude for the cultivation of cashew so as to avoid the impact of low minimum temperatures.*

It must be noted that the various centers from where temperature data was available are at the following altitudes,

El Piyonal	440 meters
Villa Humada	830
Las Acasias	490

The data from Villa Humada taken from 830 meters would suggest a level of minimum temperatures that might form the limit of the acceptable range. It would be recommended that cashew production preferably be located in areas of about 850 meters and below. Areas of an altitude of 900 to 1,000 meters would be considered as less acceptable.

ANNEX A

Description of Major Markets

A. United States Market

The United States is the world's largest cashew market and the most important concentration of the cashew trade is in New York. The U.S. market has shown strong growth over the past 15 years or so.

Cashew Imports to the U.S. and World Kernel prices

	MT kernel	kernel prices (US$/lb W320)
1983/85 average	42,905	2.25
1986/88 average	41,409	3.10
1989	41,401	2.45
1990	54,469	2.38
1991	49,455	2.75
1992	61,093	2.47
1993	59,954	2.38
1994	61,632	2.40
1995	52,677	2.56
1996	59,029	2.68
1997	65,108	2.50
1998	64,405	2.47

There has been a 47.6 percent increase in imports between average imports of 1983/85 and 1996/98. This growth has been a steady increase with occasional regressions due to higher prices.

The U.S. market is largely supplied from India and Brazil, in particular Brazil exports the majority of its product to the U.S. (75 percent in 1996).

Imports to USA 1996	mt kernel
India	28,845
Brazil	25,059
Vietnam and others	5,125

Source : Amberwood Trading and The Cashew

Importers into the U.S. can be broadly classified into three categories:

1. Planters (RJR Nabisco)
2. Agents
3. Traders/dealers

Planters is the largest user (retail brand) in the U.S. and until 1990 the company used to source its requirements through Nabisco Commodities - its internal central buying arm. This included supplies from Iraceama in Brazil, its wholly owned processing company. After the restructure of RJR Nabisco in 1990, Planters closed down Nabisco Commodities reverted to sourcing its supplies through other traders and agents.

The *traders/dealers* purchase cashew and take title to stock before selling to customers. They may take positions either short or long in the market and are well placed to handle prompt stock requirements for customers. There are about eight significant traders ;

- J.F Braun (now owned by Atlanta Corp, Elizabeth NJ.)
(contact Jerry Vogel)
265 Post Avenue, Westbury, New York
phone 516 - 997 2200, fax 516 - 997 2478

- Ludwig Muller (contact Ernst Muller)
2 Park Avenue, New York. 10016.
phone/fax 212 - 9696220

Other traders are:

- Red River
- Kazzam
- SLD Commodities
- Zenobia Co
- Wrigley Nut
- Setton Co
- Ann's House of Nuts
- Hershey (Canada)
- Gel Spice

The *agents* play an intermediary role in the US market by acting as representatives of exporters and sell to either traders/dealers or to end users fro a commission of about 1.5 to 2.0 percent. The major agents in the U.S. follow:

- Richard Franco Agency (contact David Rosenblatt or Johnathon Monschien)
379 Morris Avenue, Springfield, NJ.
Ph 1-973-3764 111, fax 1-973-3768 196

- Amberwood Trading Ltd (contact Jeremy Holt)

Fortaleza, Brazil.
Ph 55-85-273 3444, fax 55-85 273 2477
Although Amberwood maintain their office in Brazil they sell into the US (and European) markets.

Other agents are:

- Steinhardter & Nordlinger

- Mitchel Beck

- Bob Sessler

End users - there are three major retails brands in the U.S., their estimated market shares follow:

	Percentage
Planters	22
Eagle (Anheuser Busch)	7
Fisher (Proctor & Gamble)	8
generic brands	63

B. European Market

The major consuming countries in Europe are Holland, Germany, UK and Rotterdam. Especially London and to a lesser degree Hamburg have become the important entry points for edible nuts into Europe. However, this trade has the effect of over estimating the volumes consumed in these countries as there is an inter- country trade from these centers to other countries in Europe.
The estimated cashew imports into Europe follow:

	MT kernel	
	1997	1998
UK	6,909	7,954
Holland	10,636	12,045
Germany	11,090	8,522
others	6,340	7,522
	---	---
	34,975	36,043

Source : Mann Producten. Rotterdam.

The European market (as measured by imports to Holland, UK and Germany) has also grown significantly by 253 percent between 1983/85 and 1996/98.

	1983/85 average	1989/91 average	1996/98 average
MT kernel	8,177	12,302	28,937

The European market (UK Holland, Germany) is mainly supplied by India as shown below:

	MT kernel - 1996
India	22,934
Brazil	2,525
Vietnam, Africa etc.	4,198

Source : Amberwood Trading and The Cashew

The European market is different to the U.S. market. In the UK about 90 percent of the imports are purchased by end users via agents/brokers and 10 percent is handled by traders/dealers.

KP (United Biscuits) are the major retail brand in UK with an estimated 70 percent of the market. They buy through traders (Bond Commodities and others) as they wish to protect themselves from defaults on contracts. KP's requirements are 95 percent W320s and some W240's and splits. They are currently supplied by 2 to 3 suppliers in India but willing to consider Vietnam as they have a good opinion on Vietnamese quality.

The other brands are Planters (Pepsi) and the generic brands such as Tesco, Asda, Sainsbury, Safeway, and M&S.

The significant *traders* in UK follow:

1. Bond Commodities phone 44-207- 4881940
   contact – Mr. Neil Hyde. They currently import from India, Brazil and Vietnam, They currently company supply KP (major UK brand) and Sun Valley.

2. Community Foods phone 44-208-450 9411, fax 44-208-2082906
   contact – Mr. Ralph Draper. They currently import from India and China, May also have interest in organic product.

3 Barrow Lane & Ballard. Phone 44-20-735 78774, fax 44-20-735 78905,
   email blb@barrow-lane.co.uk
   contact – Peter Morgan. Is a major buyer who purchases 30 containers (450 MT) kernels per month into Europe. Has an interest in normal trade as well as organic cashew. Would require certification for organic crop.

4. Klinkenberg : sees India as preferred origin of supply, but believes Vietnamese quality very similar to India.

Other major traders are (1) Mann Producten and IMKO (Holland), (2) Liebelt (Germany) and Martin Rossini (France).

C. Australian Market

Australia imports virtually 100 percent of its cashew requirements as domestic production is still negligible. Consumption of cashew has increased significantly in the past 15 years as follows:

1985/86	- 2,299 mt
1989/90	- 2,970 mt
1998/99	- 5,529 mt

A detailed breakdown of the kernel supply to Australia in 1998/99 follows:

Vietnam	- 2,631 mt
India	- 2,276 mt
Indonesia	- 401 mt
Brazil	- 126 mt
China	- 43 mt
Others	- 49 mt

(Source : Australian Bureau of Statistics)

In previous years the dominant source of supply was India, however in the past few years Vietnam has become the major supplier because the trade believes Vietnamese crop is better graded and shipping is quicker and cheaper.

Cashew imported into Australia has to satisfy the requirements of the Australian Food Standards Regulations, which are administered by the Australian Quarantine Inspection Service (AQIS). This usually involves AQIS making random inspections on imported product to test for levels of infestation, heavy metals and pesticides.

The Australian cashew import business is dominated by the following six commodity trading companies. An approximate estimate of the various market shares of these companies is given below ;

- Jorgenson Waring Foods	- 40 %
- Michael Waring Trading	- 20 %
- GB Comtrade	- 15 %
- Scalzo	- 12 %
- Lea McKeand	- 5 %
- Food Traders	- 5 %
- others	- 3 %

Contact details for the major traders in Australia are ;

Jorgenson Waring Ltd
(contact Laurence Van Driel)
16 Jellico Drive

Scoresby, Victoria. 3179
phone 61-2-9764 9888
fax 61-2-9764 9225

Michael Waring Trading (Melbourne)
(contact John Waring)
176 Wellington Parade
East Melbourne, Victoria. 3002.
phone 61-3-9416 1155
fax 61-3-9416 0856

GB Comtrade
(contact Gerard Brunton)
9/1051 Pacific Highway
Pymble NSW, 2073
phone 61-2-9988 3899
fax 61-2-9988 3781

ANNEX B

Indian Cashew Grades

Available in hard copy only.

ANNEX C

Processing Factory Assessment Questionnaire

As used by typical Australian importer when assessing hygiene of processing factory.

Available in hard copy only.

ANNEX D

Proposal by UNC for New 1,000 Hectare Cashew Plantation

Available in hard copy only.

ANNEX E

Proposal by UNC for Upgrade of Existing Processing Factory

Available in hard copy only.

ANNEX F

Consultant's Terms of Reference

Assignment: Cashew Industry Employment Generation: a REACT activity

Background:

Promotion of the Honduran cashew industry began in the 1960s but had its greatest growth between 1978 and 1982. Organizations including BANADESA, INA, BCIE, UNAH, and FAO have provided assistance to the industry. Since 1979, through support from the Central American Bank for Economic Integration (BCIE) and the National Agrarian Institute (INA), approximately 5,000 hectares of cashew trees were established. The plantings were distributed among 75 campesino groups and individual producers located in the departments of Valle and Choluteca. The groups include the U.N.C., ACAN, and FECORACH.

According to the SAG, these groups and independent producers currently maintain about 2,000 hectares of mature trees and about 400 hectares of new plantings. The mature trees require rehabilitation. The southern region accounts for most of Honduran production and produces about 26,000 cwt of cashews per year from about 2000 Hectares (13 cwt/Ha.). Production is distributed as follows: 25% from the UNC Proyecto Marañon, 25% from the La Sureñita cooperative (COPROMAZSH), and 50% from Tecniservicios Monjaras. The first two organizations are land reform, farmer groups and the last is a conventional private enterprise.

The IV National Agricultural Census (1993) reported the Choluteca (southern region) Department as having 330 of the 465 cashew plantations consisting of 1,181 Ha. under cultivation producing 2,743 TM. Also, according to the same census, this represented approximately 80% of the area under cultivation and in production for the entire country. Within the Department of Choluteca, the Municipality of El Triunfo has 95 plantations covering 570 Ha., producing 1034 TM.

Sales are divided between raw and processed nuts. Twenty percent is reportedly sold unprocessed into the Guatemalan market. Thirty percent is sold processed to Belgium, Germany, and the US. The remaining 50% are sold processed to El Salvador.

Cashew tree by-products are underutilized. Only about 15% of the estimated 3000 TM of false fruit is used and is sold fresh. About 20% of the oil is processed into paints, varnish, and wood treatment products for the local market and the balance is reported unused.

According to the SAG, and the ECOAGRO technicians, expert assistance is needed for production, processing, marketing, and training of Honduran technical advisors. More specifically, the following topics have been cited as important to address:
Production:

- Asexual reproduction

- Organic control of insects and diseases
- Introduction of improved varieties (Brazilian precocious dwarf)
- Genetic improvement

Processing:

- Oil extraction using various solvents (including water)
- Improvement of manual shelling
- Improvement of nut color
- Organic control of insect pests during storage (grain moth)
- Automated packaging of processed nuts

Marketing

- Identification of new markets for raw and processed nuts
- Contacts with markets favoring trade with developing countries (Belgium, Netherlands, etc.)
- Organic certification for raw and processed nuts

Several organizations are providing assistance to strengthen the cashew industry including FHIA/FINTRAC that will provide a Brazilian specialist between September 28 and November 6 to advise producers on appropriate varieties and production technologies; the Secretariat of Agriculture; and the GTZ. The UNC receives technical assistance from a consulting firm, ECOAGRO, which is 90% paid by the PROMOSTA Project.

The Camara de Comercio del Sur, covering the Departments of Choluteca and Valle, and its competitiveness committee have requested PEP to conduct a comprehensive assessment and develop an action plan for the development of the cashew industry.

Purpose: This consultancy will contribute to an increase in rural employment through leveraging resources to increase and improve cashew production, processing, and export sales. In close collaboration with other technical assistance providers, the consultant will assess and advise regarding market opportunities and processing after over viewing production and the general status and potential of the industry. A practical, results oriented action plan will be developed and presented for improvement of the industry.

The relationship of these results to USAID Special Objective- Reactivation of the Economy through Agricultural Credit and Technologies (REACT) results framework is through contribution to: intermediate results (IR) 1.1.3 and 1.1.4 of the Special Objective, namely, recovery and reactivation of small and micro -enterprise and small and medium farms and IR 2 of Strategic Objective No1 - Improved Market Access and Competitiveness by the Poor. PEP will establish benchmark indicators in secondary cities and annually measure contributions to achievement of these IRs.

Tasks:

1. Based on preliminary assumptions of product quality and availability, while at the point of origin or, if necessary, at a market location, collect and package information about potential

markets that could be penetrated by Honduran cashew products over the short and medium term.

2. Upon arrival in Honduras, brief PEP staff on potential market opportunities and provide a brief, written report.

3. Within the first three workdays of the field assignment, develop a work plan for the remainder of the consultancy. The work plan should include a travel itinerary and schedule. Coordinate activities with the FINTRAC/FHIA consultant, SAG, ECOAGRO, INA, campesino organizations and other interested parties.

4. Visit the Choluteca area to overview production and processing conditions. Deliver a seminar on cashew production, processing, and marketing for small farmers in the region.

5. Discuss and draft an action plan, for increasing export sales of cashew products, with interested parties in the Choluteca area.

6. Within one workweek of arrival in Honduras, develop and discuss a preliminary outline for the final report.

7. Visit the Danlí area with assistance from local Chamber of Commerce and competitiveness committee representatives to rapidly assess the potential of that region to compete in the cashew industry and produce a summary report of findings.

8. Produce and submit a final report for PEP and the Choluteca Chamber of Commerce. The report should emphasize follow-up technical assistance that is recommended to implement the action plan developed during the consultancy. .

9. Brief interested parties of the Choluteca area, PEP, and, as appropriate, USAID, FINTRAC, and other cooperating organizations before departure from Honduras.

Deliverables:

1. Written and oral summary of market potential - upon arrival in Honduras.

2. Work plan - within three workdays of field assignment.

3. Draft report outline - within one workweek of arrival in Honduras.

4. Written summary of cashew industry potential for Danlí area - prior to departure from Honduras

5. Final written report - before departure from Honduras

5. Oral briefing (s) - before departure from Honduras

Timing/Duration:

This assignment will begin on/about September 20 and consist of approximately 24 workdays. Upon initiation of the assignment, two to four days, as needed, will be utilized, at the consultant's point of origin or at a market location, to assemble relevant market information to be presented upon arrival in Honduras. The consultant will utilize approximately 20 to 22 consecutive workdays, including travel time, to complete the field portion of the assignment.

Location:

The consultant will be located at his/her point of origin or at a market location outside of Honduras during the first two to four days of this assignment. The remainder of the work will take place traveling to/from Honduras, in Tegucigalpa, and in other locations within Honduras.

Reporting:

While in Honduras, the consultant will report directly to the Secondary Cities component manager of the PEP team, Milton Muñoz or his designee. Mr. Muñoz is responsible for monitoring the consultant’s overall performance under the terms of the contract.

Qualifications:

The consultant will be an experienced, broad-based expert in the cashew industry. He/she will have substantial international experience, including in Central America. Fluency in Spanish is required.

ANNEX G

The Consultant

IAN DUNCAN

A cashew specialist with more than twenty years of experience in the agricultural sector managing and providing technical assistance to various cashew and agricultural projects worldwide. Expertise in assessing areas for possible cashew production taking into consideration the infrastructure needed for production, harvesting and processing and soil and climatic requirements of the crop. Extensive knowledge and outstanding skills in conducting evaluations of cashew plantations and processing operations in view of providing recommendations for improvements. Currently directs own company, Australian Cashew Company, to increase cashew production in Australia. Proficient in Spanish.

EDUCATION

M.B.A., Monash University, Australia, 1973.
B. Ec., economics Monash University, Australia, 1971.
Diploma, agricultural science, Royal Agricultural College, United Kingdom, 1962.

PROFESSIONAL HISTORY

1996- present Director, Australian Cashew Company, Australia. Established this company to invest in cashew and pistachio production and marketing in Australia. The goal of the company is to establish a 500-hectare cashew plantation.

Sep-Nov. 1999 Consultant, Mekong Project Development Facility, Oxford, England. Conducted a financial analysis of cashew processing factory in Vietnam and assisted with the marketing of Vietnamese cashew in Australia.

August 1999 Consultant, National Cooperative Business Association, USAID/ CRECER project, San Salvador, El Salvador. Prepared and reviewed a report on cashew plantations for use by Chemonics' CRECER project in El Salvador.

July 1999 Consultant, European Union. Assisted a member of the European delegation to introduce Oecophylla smaradgina as a biological control agent against cashew insect pests.

March-April 1999 Consultant, National Cooperative Business Association, USAID/ CRECER project, San Salvador, El Salvador. Reviewed cashew production, processing, and marketing functions in three different production and processing operations in El Salvador.

July-Oct. 1998 Consultant, R&D Consulting, Lisbon, Portugal under contract with the European Union. Conducted research of physical, economic and social factors to evaluate potential to develop new cashew industry in PNG for Livestock Development Corporation. Established a specific plan for development and provided technical assistance in early implementation phase to overcome limiting factors by introduction of new genetic material and biological control of insect pests.

May 1998 Consultant, Agricultural Rehabilitation and Development Program-Mozambique, FAO Investment Centre Division, Rome, Italy. Provided technical assistance for audit of cashew part of large agricultural rehabilitation project.

Nov-Dec. 1997 Consultant, National Cooperative Business Association, USAID/ CRECER project, San Salvador, El Salvador. Reviewed of progress of new programs introduced in farm management in Coralama cashew plantations, and assessed procedures and made recommendations for improving the processing functions of the operations.

October 1997 Consultant, National Cooperative Business Association, USAID/ CRECER project, San Salvador, El Salvador. Prepared report on nutrition and cashew plantations in El Salvador.

August 1997 Team member, CSIRO Division Land and Water, Atherton, Australia. Contributed to the development and data gathering in the preparation of Cashew Information Database.

August 1997 Consultant, National Cooperative Business Association, USAID/ CRECER project, San Salvador, El Salvador. Preparation of report on major cashew insect pest problem at Coralama plantations.

Jan.-Feb. 1997 Consultant, National Cooperative Business Association, USAID/ CRECER project, San Salvador, El Salvador. Review of all cashew production processing and marketing functions at Coralama plantations and recommendations for improvements.

June-Oct. 1996 Consultant, R&D Consulting, Lisbon, Portugal. Reviewed options and made recommendations to a large Mozambican company interested in expanding its business into the production, processing and marketing of cashew in the country. Completed the necessary analysis and prepared reports required for presentation to potential sources of funding.

March 1994 Consultant, High Value Horticulture, London, United Kingdom. Reviewed progress on cashew plantation operated by a Sri Lankan company and followed up on recommendations for improvements made in previous visit

in March 1993. Initiated new management systems on the plantation and arranged a research component in collaboration with the University of Peradynia in Kandy.

1993 - 1994 Consultant, FAO Investment Centre, Rome, Italy. Member of a UN Mission to Uganda that evaluated and prepared report on cashew processing and marketing operations in the country.

1993 Consultant, High Value Horticulture and Newcastle Protection and Indemnity Association, London, United Kingdom. Prepared report on damage to raw cashew nuts spoiled during shipment between Vietnam and India. Represented insurance company in relation to a claim dispute.

1993 Consultant, Department of Livestock Development, Papua New Guinea. Reviewed progress to-date of existing cashew plantations and made recommendations and mapped out plans for future development in the plantation and processing operations.

1990 - 1996 Managing Director

1987 - 1990 Project Manager, Wildman River Plantations Pty, Ltd., RJR Nabisco, Darwin, Australia. Oversaw the set up of research/pilot farm for cashew production to develop new varieties and advanced horticultural methods that were suitable for commercial cashew production in Australia. Supervised a staff of seven. As Managing Director, was in charge of fulfilling the company's objectives of establishing a major cashew production enterprise on the 28,000 hectares of land owned by the company. Responsibility included financial and administrative arrangements in relation to obtaining additional investors and other financial support.

LANGUAGES English and Spanish.

PERSONAL Australian and British citizen.